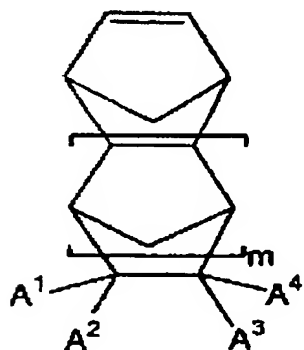


CLAIMS:

1. A process for preparing a cycloolefin addition polymer, comprising addition-polymerizing monomers containing a cycloolefin compound represented by
- 5 the following formula (1) in the presence of:
- a multicomponent catalyst comprising:
- (a) a palladium compound,
- (b) a compound selected from an ionic boron compound, an ionic aluminum compound, a Lewis acidic
- 10 aluminum compound and a Lewis acidic boron compound, and
- (c) a phosphine compound having a substituent selected from an alkyl group, a cycloalkyl group, and an aryl group of 3 to 15 carbon atoms, and having a cone angle (θ deg) of 170 to 200, or its phosphonium salt, and
- 15 ethylene;

[Chemical Formula 1]



... (1)

wherein A¹ to A⁴ are each independently a hydrogen atom, an alkyl group, a cycloalkyl group, an aryl group, an ester group, an alkoxy group or a trialkylsilyl group of 1 to 15 carbon atoms, or a hydroxyl group, and may be
5 each bonded to a ring structure through an alkylene group of 1 to 20 carbon atoms or a linkage of 0 to 10 carbon atoms containing at least one atom selected from an oxygen atom, a nitrogen atom and a sulfur atom, A¹ and A² may together form an alkylidene group of 1 to 5 carbon
10 atoms, a substituted or unsubstituted alicyclic or aromatic ring of 5 to 20 carbon atoms or a heterocyclic ring of 2 to 20 carbon atoms, A¹ and A³ may together form a substituted or unsubstituted alicyclic or aromatic ring of 5 to 20 carbon atoms or a heterocyclic ring of 2 to 20
15 carbon atoms, and m is 0 or 1.

2. The process for preparing a cycloolefin addition polymer as claimed in claim 1, wherein the multicomponent catalyst comprises:

- 20 (a) a palladium compound,
- (b) a compound selected from an ionic boron compound, an ionic aluminum compound, a Lewis acidic aluminum compound and a Lewis acidic boron compound,

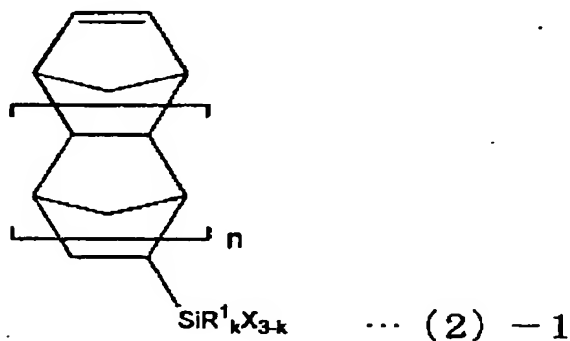
(c) a phosphine compound having a substituent selected from an alkyl group, a cycloalkyl group and an aryl group of 3 to 15 carbon atoms, and having a cone angle (θ deg) of 170 to 200, or its phosphonium salt,

5 and additionally

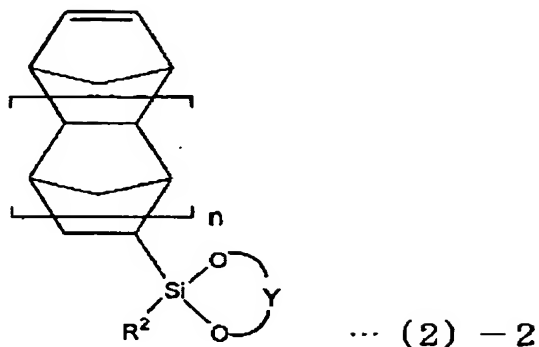
(d) an organoaluminum compound.

3. The process for preparing a cycloolefin addition polymer as claimed in claim 1 or 2, wherein
 10 monomers containing 70 to 98% by mol of the cycloolefin compound represented by the formula (1) and 2 to 30% by mol of a cycloolefin compound having an alkoxyethyl group and represented by the following formula (2)-1 and/or the following formula (2)-2 are addition-polymerized;

15 [Chemical Formula 2]



[Chemical Formula 3]



wherein R^1 and R^2 are each a substituent selected from an alkyl group, a cycloalkyl group, an aryl group of 1 to 10
5 carbon atoms, and a halogen atom,

X is an alkoxy group of 1 to 5 carbon atoms,

Y is a residue of a hydroxyl group of an aliphatic diol of 2 to 4 carbon atoms,

k is an integer of 0 to 2, and

10 n is 0 or 1.

4. The process for preparing a cycloolefin addition polymer as claimed in any one of claims 1 to 3, wherein the palladium compound (a) is an organic
15 carboxylic acid salt of palladium or a β -diketone compound of palladium.

5. The process for preparing a cycloolefin addition polymer as claimed in any one of claims 1 to 4,

wherein the amount of ethylene used in the addition polymerization is in the range of 0.1 to 5.0% by mol based on all the monomers.

- 5 6. The process for preparing a cycloolefin addition polymer as claimed in any one of claims 1 to 5, wherein monomers containing bicyclo[2.2.1]hept-2-ene in an amount of not less than 80% by mol in all the monomers are addition-polymerized in the presence of a
- 10 polymerization solvent containing an alicyclic hydrocarbon solvent in an amount of at least 50% by weight.